What is claimed is:

1. An apparatus for generating finite impulse response (FIR) filter coefficients comprising:

(a) an address generator that multiplies a desired cutoff frequency f_c by an integer n to generate an address;

(b) a first look-up table that generates a sine function value of said address;

(c) a divider that divides said sine function value by $n\pi$;

(d) a multiplexer that generates an impulse response function value by selecting one of a first value provided by said divider and $2f_c$ based on an outside control signal; and

(e) a multiplier that multiplies said impulse response function value by a corresponding window function value to generate an nth filter coefficient value.

2. The apparatus of claim 1, wherein said multiplexer generates said impulse response function value by selecting said first value if n is equal to 0 or by selecting $2f_c$ if n is not equal to 0.

3. The apparatus of claim 1, wherein n=0,1,2,...,N-1, where N represents a number of filter taps.

4. The apparatus of claim 1, wherein said nth filter coefficient value can be non-zero only when $-\frac{N-1}{2} \le n \le \frac{N-1}{2}$, where N represents a number of filter taps.

5. The apparatus of claim 1, wherein said window function value is obtained by using any one of Rectangular, Bartlett, Hanning, Hamming, and Blackman window functions.

6. The apparatus of claim 1, further comprising a second look-up table that receives n and generates said corresponding window function value.

7. An apparatus for generating low-pass or high-pass or band-pass FIR filter coefficients using more than one low-pass filter coefficient generating devices having different desired cutoff frequencies, the apparatus comprising:

(a) at least two low-pass filter coefficient generating devices, each of said devices comprises

(a1) an address generator that multiplies a desired cutoff frequency f_i by an integer n to generate an address,

(a2) a first look-up table that generates a sine function value of said address,

(a3) a divider that divides said sine function value by $n\pi$,

(a4) a multiplexer that generates an impulse response function value by selecting one of a first value produced by said divider and $2f_t$ based on an outside control signal, and

(a5) a multiplier that multiplies said impulse response function value by a corresponding window function value to generate an nth low-pass filter coefficient value; and

(b) an adder coupled to said devices for generating an nth low-pass or high-pass or band-pass filter coefficient value by adding or subtracting each of said low-pass filter coefficients generated by said devices in the step (a5).

8. The apparatus of claim 7, wherein said multiplexer generates said impulse response function value by selecting said first value if n is equal to 0 or by selecting $2f_t$ if n is not equal to 0.

9. The apparatus of claim 7, wherein n=0,1,2,...,N-1, where N represents a number of filter taps.

10. The apparatus of claim 7, wherein wherein said nth filter coefficient value generated in the step (b) can be non-zero only when $-\frac{N-1}{2} \leq n \leq \frac{N-1}{2}$, where N represents a number of filter taps.

11. The apparatus of claim 7, wherein said window function value is obtained by using any one of Rectangular, Bartlett, Hanning, Hamming, and Blackman window functions.

12. The apparatus of claim 7, wherein each of said devices further comprises a second look-up table that receives n and generates said corresponding window function value.

13. A method for generating finite impulse response (FIR) filter coefficients, the method comprising,

(a) generating an address by multiplying a desired cutoff frequency f_t by an integer n;

(b) generating a sine function value of said address;

(c) dividing said sine function value by $n\pi$;

(d) generating an impulse response function value by selecting one of a first value produced from said division in the step (c) and $2f_t$ based on an outside control signal; and

(e) generating an nth filter coefficient value by multiplying said impulse function value by a corresponding window function value.

14. The method of claim 13, wherein said impulse response function value is generated by selecting said first value if n is equal to zero or by selecting $2f_t$ if n is not equal to zero.

15. The method of claim 13, wherein n=0,1,2,...,N-1, where N represents a number of filter taps.

16. The method of claim 13, wherein said nth filter coefficient value can be non-zero only when $-\frac{N-1}{2} \le n \le \frac{N-1}{2}$, where N represents a number of filter taps.

17. The method of claim 13, wherein said window function value is obtained by using any one of Rectangular, Bartlett, Hanning, Hamming, and Blackman window functions.

18. The method of claim 13, wherein said corresponding window function value is a $(n+(N-1)/2)$th window function value.